Remarks

In the Final Office Action, the Examiner again rejected claims 18-24, 26, 28-34, 36 and 39 pursuant to 35 U.S.C. §103(a) as being unpatentable over Saito et al. (JP 11-078656) (using Saito et al. U.S. Patent No. 6,208,249 as a translation) in view of Sakai et al. (U.S. Patent No. 6,253,133) and further in view of Weib (DE 198 26 391). Claims 25 and 35 were rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Saito et al. in view of Sakai et al. and further in view of Weib and Okamura et al. (U.S. Patent No. 6,490,515). Claims 27, 37, 40-55 and 57-59 were rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Saito et al. in view of Sakai et al. and further in view of Weib and Ekman et al. (U.S. Patent No. 5,927,817).

Applicants respectfully request reconsideration of the rejections of the claims 18-37, 39-55 and 57-59, including independent claims 18, 28, 39, 40, 49 and 55.

Independent claim 18 claims a moisture resistant cover adjacent a sensor operable to transmit energy into a seating area. Independent claim 28 claims covering a sensor with a moisture resistant cover and transmitting energy from the sensor into a seating area. Independent claim 39 claims a moisture resistant cover over a sensor.

A person of ordinary skill in the art would not have placed the moisture resistant cover adjacent to the sensor of Saito in order to enhance accuracy in detecting the passenger position as suggested by the combined teaching of Sakai and Weib. First, Sakai et al. propose a solution to the humidity variation – altering the thresholds based on the humidity or soaking (col. 11, lines 7-16). A person of ordinary skill in the art would have used the adjustment of thresholds suggested by Sakai et al., not a moisture cover over a sensor. Second, Weib teaches away from using sensors that rely on transmitted energy, so a person of ordinary skill in the art would not have used the water repellent textile integrated as part of the sensor of Weib with the transmitting sensor of Saito et al. Weib teaches that sensors relying on transmitted energy are undesired (page 1, line 15-page 2, line 5). Saito et al. uses such transmitted energy devices (col. 11, lines 38-57) and teaches that the pressure or weight sensing used by Weib is undesired (col. 2, lines 12-22). Since the water repellant textile of Weib is integrated with the sensor (page 3, lines 13-17), a person or ordinary skill would not have used the water repellant textile or film of Weib with the sensor of Saito et al. given the

contrary teachings. For any of the reasons discussed above, claims 18, 28 and 39 are allowable over the references cited by the Examiner.

In response to these arguments, while noting that Sakai does not disclose a cover, the Examiner alleges a person of ordinary skill would have been motivated to find a way to prevent the sensor from being surrounded with moisture. Sakai et al. teach adjustment of thresholds to deal with humidity and soaking. There is no suggestion that threshold changes would be insufficient. Given Sakai et al.'s explicit suggestion to deal with soaking in water by threshold adjustment, there is no motivation as alleged to use a cover.

The Examiner further relies on Weib for use of a cover, and disagrees with Applicants characterization of Weib indicating that sensors relying on transmitted energy are undesired. The prior art sensors at Weib page 1 use transmitted energy to detect a passenger between an electrode and a vehicle body or between two side-by-side electrodes. Weib notes that these known sensors use the passenger as the dielectric (page 1, ¶ 4). After noting that such prior art sensors must be near the surface of the seat, Weib begin the next paragraph with "another disadvantage." Weib clearly teach that relying on the passenger as a dielectric is not desired. As an alternative, Weib suggest electrodes disposed over each other with a non-passenger dielectric in between to form a pressure mat for sensing load due to changes in distance between the electrodes (page 2, ¶¶ 3 and 4). Weib clearly discourages the use of sensors using the passenger as a dielectric, but instead use a weight sensor type structure. As noted by the Examiner, Saito do not desire a weight sensor, but instead use the passenger as a dielectric. A person of ordinary skill in the art would not have used the cover of Weib in a passenger dielectric sensor since Weib discourages the sensor of Saito and Saito discourages the sensor of Weib.

The Examiner notes the similarities of these two types of sensors, but fails to note the fundamental differences. Weib is a closed system since the dielectric is not a passenger, but is a thin layer between two electrodes forming a weight sensor. A cover is used to seal the closed system. Saito is an open system using the passenger as a dielectric. Threshold adjustments (see Sakai) or the size of the electrode (see Saito Col. 22, lines 8-11) are used to deal with wetness for the open "passenger as dielectric" type sensors. There is no suggestion to use a cover in such sensors. The explicit suggestions in Saito et al. and Sakai et al. teach techniques other than a cover where a passenger dielectric is detected. Since Saito et al.

discourage weight sensors and Weib discourage passenger dielectric sensors, a person of ordinary skill in the art would have used the explicit threshold or size of electrode change, not the cover of Weib.

The Examiner even notes that the cover would be used "when only smaller size electrodes are available." However, threshold changes may be used (see Saito et al.) as well or alternatively, not a cover. Further, there is no suggestion that only smaller size electrodes would have been a possible situation. A person of ordinary skill in the art would have used larger electrodes or threshold changes, not the cover of an undesired type of self contained sensor.

Finally, the Examiner noted that claim 18 does not teach any element that makes a cover desirable contrary to Saito and Weib [sic – Weib uses a cover for a different type of sensor. Perhaps the Examiner intended Sakai here]. A cover may not be undesirable, but would not have been used with Saito given the explicit different approach to soaking in water of Saito and the teaching that weight sensors like Weib are undesired.

Independent claim 40 claims "at least one aperture in the seat cushion adjacent to the occupant detection sensor, the at least one aperture positioned on an upper surface of the seat cushion, upper corresponding to a position of the seat cushion in use in a vehicle seat." Independent claim 49 claims "forming at least one drain in the seat cushion adjacent the occupant detection sensor, the at least one drain positioned at a low point of the seat cushion, low corresponding to a position of the seat cushion in use in a vehicle seat." Independent claim 55 claims "a vehicle seat having an insulator, the insulator having at least one drain . . . wherein the at least one drain is positioned at a low point of an upper surface of the insulator, low and upper corresponding to a position of the insulator in the vehicle seat."

The Examiner relies in part on the rejection of claim 18 above for rejecting claims 40, 49 and 55. As discussed above, claim 18 is allowable, so claims 40, 49 and 55 are allowable for the same reasons.

A person of ordinary skill in the art would not have opened "an aperture at the low point of the cushion near the sensor of Saito in order to facilitate quick draining of liquid to prevent soaking of water to the sensor" given the teachings of Ekman et al. First, the aperture of Ekman et al. allows air flow from a fan 38 through a channel 42 to the aperture

50 (col. 3, lines 58-60). The aperture 50 provides a route to an electronic device, so a person of ordinary skill in the art would not have used the aperture teaching of Ekman et al. to form a drain. Second, there is no motivation to use any aperture near an occupant sensor. Third, Weib suggest use of a water repellant textile, removing the motivation cited by the Examiner to remove liquid to prevent soaking. A person of ordinary skill in the art would not have used the air flow aperture of Ekman et al. to provide an aperture or drain adjacent to an occupant sensor.

In response to these arguments, the Examiner agrees that Weib suggests use of water repellant textile, but alleges that in situations of serious water pill, selecting the cushion of Ekman to minimize moisture is routine skill. However, Ekman is directed to air flows, not water drainage. A person of ordinary skill in the art would not have used Ekman given the motivation cited by the Examiner even if an unintended result of Ekman is drainage. As noted, Ekman included an electronic device in the aperture route, so the aperture of Ekman would not have been used for excess water drainage associated with serious water pill. There is no suggestion that the cover of Weib would not be effective for serious water pill, so the motivation cited by the Examiner is mere hindsight. Finally, the Examiner does not address the lack of a teaching for use of an aperture near a sensor as opposed to elsewhere.

Dependent claims 19-27, 29-37, 41-48, 50-54 and 57-59 depend from the independent claims discussed above, so are allowable for the same reasons. Further limitations are allowable over the art relied on by the Examiner.

Claims 21 and 31 claim a plastic cover or covering in plastic. Weib shows a textile or film, not plastic. The Examiner alleges plastic as a design choice. However, plastic as a cover material in a seat is not a choice a person of ordinary skill would have made. Seating is designed for comfort, such as through air flow (see Ekman), so a textile would have been used, not plastic.

Claims 25 and 35 claim a moisture sensor adjacent to or on a side of the occupant detection sensor. Okamura et al. use two sensors to make conclusions or determine states of occupancy (col. 12, lines 12-17). A person or object is not on the seat if both sensors do not detect something (col. 12, lines 18-28). Where the pressure sensor does not detect something but the dielectric sensor does, the seat is determined as wet though vacant (col. 12, lines 28-35). Okamura et al. use two different occupant detection sensors where disagreement

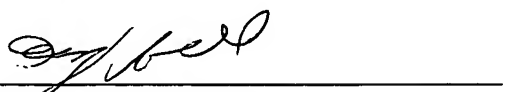
indicates a problem, such as moisture, so do not suggest a moisture sensor adjacent to an occupant detection sensor. The Examiner would provide the sensor of Okamura as a separate moisture sensor. However, there is no suggestion to provide both, especially where a cover is provided for protection.

Claims 26 and 36 claim covering part of a soft insulator. Weib disclose the sensor with the water repellant textile as being installed at a lower point in the seat while a heater is adjacent the surface. Weib position the sensor and water repellant textile away from the top of the foam, so do not cover part of the foam with the water repellant textile. The Examiner alleges positioning requires only routine skill. However, Weib teaches a specific location. Routine skill would be to use that taught location.

Claims 42 and 50 claim positioning the aperture or drain at a low point. Since the aperture of Ekman et al. is for air flow, it would not have been obvious to position the aperture at the low point as opposed to a point leading to the most comfort for the occupant, such as location centered with respect to the area of occupant contact with the seat.

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application in the next Office Action and believes that an interview would be helpful to resolve any remaining issues, he is respectfully requested to contact the undersigned attorneys at (312) 321-4200.

Respectfully submitted,



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